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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:

Yoshiki Nakagawa, et al.

Application No.: 09/807,069

Filed: July 11, 2001

Art Unit: 1713

Examiner: D.R. Wilson

For: POLYMERS HAVING REACTIVE
FUNCTIONAL GROUP AT THE TERMINUS
AND CURABLE COMPOSITIONS
COMPRISING THE SAME

DECLARATION UNDER RULE 132

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

I, Shigeki Ono, a citizen of Japan and having postal mailing address of 5-31-103, Torikainishi 5-chome, Settsu-shi, Osaka 566-0072 JAPAN, declare and say that:

March, 1997, I was graduated from Kyoto University and received a Master Degree in chemistry;

From April, 1997, up till the present, I have been employed by Kaneka Corporation, and engaged in the works of research and development for reactive oligomer, in particular poly(acrylate ester);

I am familiar with the subject matter of the above-identified application;

I have read the Office Action mailed and the references cited therein and am familiar with the subject matter thereof;

I respectfully submit herewith my exact report thereon;

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In order to provide the evidence to support a product with preferred properties over the cured polymers of EP 0,789,036 with terminal acryloyl groups, I have prepared in Comparative Example 1, the same polymer as that of Example 1 of the instant specification except that the terminal group is an acryloyl group, and have prepared cured products from the polymer of the Example 1, and from the polymer of the Comparative Example 1, and have compared mechanical properties of both the cured products.

Comparative Example 1

Synthesis of acryloyl-terminated poly(butyl acrylate)

A 50-mL reactor was charged with the polymer [1] (10 g) obtained in Production Example 1 of the instant specification, potassium acrylate (0.5 g) and dimethylacetamide (10 g), and the charge was stirred under nitrogen at 70°C for 3 hours. After the volatile matter was removed by heating under reduced pressure, the residue was diluted with toluene and passed through an activated alumina column. The toluene was then distilled off under reduced pressure to give an acryloyl ($-\text{OC}(\text{O})-\text{CH}=\text{CH}_2$)-terminated poly(butyl acrylate) (polymer [4]). This polymer [4] had a number average molecular weight of 22,700 and a molecular weight distribution value of 1.14. The average number of acryloyl groups introduced per mole of the polymer was 1.7 as determined by ^1H NMR analysis.

Example 5

Production of cured product from the polymer [2] of Example 1 and measurement of mechanical properties thereof

The polymer [2] (100 parts by weight) obtained in the Example 1 of the instant specification was mixed well with the organic peroxide Perbutyl I (t-butylperoxy-isopropyl-monocarbonate from NOF Corporation) (0.5 parts by weight), and the mixture was poured into a reaction vessel and defoamed under reduced pressure. It was pressed under 50 kg at 180°C for 10 minutes to obtain a

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cured product (cured product [1]).

The cured product [1] was subjected to measurement of breaking force and of elongation after fracture pursuant to the method specified in JIS K 7113.

The results are shown in Table 1 below.

Comparative Example 2

Production of cured product from the polymer [4] of Comparative Example 1 and measurement of mechanical properties thereof

The above Example 5 was repeated except that the polymer [4] of the above Comparative Example 1 was used instead of the polymer [2] to obtain a cured product (cured product [2]).

The cured product [2] was subjected to measurement of breaking force and of elongation after fracture in the same manner as in the above Example 5.

The results are shown in Table 1 below.

Table 1

	Breaking Force (MPa)	Elongation After Fracture (%)
Cured product [1]	0.31	140
Cured product [2]	0.33	90

These results clearly show that the cured product from the cinnamate-terminated polyacrylate has much greater elongation than that from the acryloyl-terminated polyacrylate, while the former maintains breaking force at the same level as the latter.

I declare further that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both,

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under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Signed this July 14, 2004

A handwritten signature in cursive script, appearing to read "Shigeaki Ono", written over a horizontal line.

Shigeaki Ono